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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/529,498

04/25/2005

Naoki Tanaka

330-296

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23117 7590 12/31/2008  
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EXAMINER

ABU ALI, SHUANGYI

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

12/31/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/529,498	<b>Applicant(s)</b> TANAKA ET AL.	
	<b>Examiner</b> SHUANGYI ABU ALI	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of Claims***

Claims 1-8 remain for examination wherein claims 1-3 are amended.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 and 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,071,606 to Yamazaki et al., in view of U.S. Patent Publication 2004/0067849 Tanaka et al.

Regarding claim 1, Yamazaki et al. disclose a method to provide a durable hydrophilic film having photocatalyst activity on a substrate (col. 1, lines 62-64 and col.4, line 20)) through a sol mixture. The sol mixture comprise of a first sol of anatase titanium oxide (col. 3, lines 6-7), a second sol of colloidal silica (col. 4, line 40) and a third sol of amorphous metal oxide such as silica to bind titania crystal together (col. 3, lines 14-15, and col. 3, lines 35-37). The amount of colloidal silica is preferred in the amount of 20-70% based on the total weight of the solid of sol mixture (col. 4, lines 58-60). The amount of titania is in the amount of 75-90 mole% and the third sol of silica is in the amount of 10-25 mole% based on the total moles of titania and the third silica sol (col.4, lines 8-12). This is about titania amount of 24-74% and third sol of silica of 2.4-16% based on the total weight of sol solid.

But Yamazaki et al. are silent about using partial hydrolyzed titanium alkoxide as a binder in sol mixture as claimed by applicant in claim1. However, it would have been obvious to one of ordinary skill in the art at the time of invention by applicants to use partial hydrolyzed titanium alkoxide as the binder in the sol mixture, motivated by the fact that Tanaka et al., also drawn to the same invention of photocatalyst titanium oxide sol mixture, disclose inorganic binder such as silicon compound and partial hydrolyzed titanium alkoxide can be used as binder in the mixed sol mixture ([0197]).

Combined teaching of Yamazaki et al. and Tanaka et al. are silent that anatase and silica are dispersed in the sol mixture, however, the sol mixture comprising solvent, it would be expected to have the same properties (anatase and silica being dispersed in the sol mixture) absent any evidence to the contrary.

Regarding claims 4 -8, Tanaka et al. disclose that various substrate can be coated with the sol mixture ([0210]).

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over combined teaching of U.S. Patent No. 6,071,606 to Yamazaki et al. and U.S. Patent Publication 2004/0067849 Tanaka et al., further in view of U. S. Patent publication 2003/0152763 to Zhang et al.

Regarding claims 2 and 3, combined teaching of Yamazaki et al. and Tanaka et al. discloses a sol mixture as applicant set forth in claim 1, but they are silent about the mixture containing ethylene monoalkyl ether as applicant set forth in claims 2 and 3. However, it would have been obvious to one of ordinary skill in the art at the time of invention by applicant to use ethylene monoalkyl ether in the sol mixture, motivated by the fact that Zhang et al. also drawn to titania dispersion, disclose that ethylene glycol monobutyl ether is preferred in the coating composition because the glycol or derivative of glycol can inhibit generation of cracks or whitening of a coating in a step of drying the coating made from the coating material .([0025]).

### ***Response to Amendment***

Applicants' amendments to claim 1, filed on 09/25/2008 are acknowledged. As such, the rejection to the claim 1 based on 35 U.S.C. 112, second paragraph set forth in the previous Office Action is withdrawn.

### ***Response to Arguments***

Applicant's arguments filed 09/25/2008 have been fully considered but they are not persuasive. Therefore, the grounds of rejection for claims 1-8 as indicated in the previous Office Action stand.

Applicant argues that Yamazaki et al. discloses of the titanium oxide being in the matrix phase. The Examiner respectfully submits that Yamazaki et al. disclose that titanium oxide is in the matrix phase after the coating lay is air-dried and baked. When the titanium oxide is in the coating dispersion (sol mixture), it is dispersed.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHUANGYI ABU ALI whose telephone number is (571)272-6453. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael A Marcheschi/  
Primary Examiner, Art Unit 1793

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